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SCHOOL FOR
HEALTH OFFICERS

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HARVARD UNIVERSITY AND THE MASSACHUSETTS
INSTITUTE OF TECHNOLOGY

CATALOGUE

AND

ANNOUNCEMENT

1916-17

PUBLISHED BY THE
SCHOOL FOR HEALTH OFFICERS
240 LONGWOOD AVENUE, BOSTON, MASS.
1916

SCHOOL FOR HEALTH OFFICERS

OF

HARVARD UNIVERSITY AND THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

CATALOGUE

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CALENDAR

1916

Sept. 23, Saturday . . . Last Day for Registration and Presentation of Schedule of Courses for Approval.

Sept. 25, Monday . . . **First Term begins.** Payment of first instalment of the tuition fee is required on or before this date.

Oct. 12, Thursday . . . . . Columbus Day.

Nov. 30, Thursday . . . . . Thanksgiving Day.

Dec. 21–27, Thursday to Wednesday . M.I.T. Christmas Recess.

Dec. 23–Jan. 3, Saturday to Wednesday . Harvard Christmas Recess.

1917

Jan. 17–27, Wednesday to Saturday . M.I.T. Recess.

Feb. 1, Thursday . . . **Second Term begins.** Payment of second instalment of the tuition fee is required on or before this date.

Feb. 22, Thursday . . . . . Washington's Birthday.

Apr. 15–21, Sunday to Saturday . . Harvard Recess.

Apr. 18–20, Thursday to Saturday . M.I.T. Recess.

May 30, Wednesday . . . . . Memorial Day.

THE SCHOOL FOR HEALTH OFFICERS

ABBOTT LAWRENCE LOWELL, LL.D., Ph.D., *President of Harvard University.*

RICHARD COCKBURN MACLAURIN, LL.D., Sc.D., *President of the Massachusetts Institute of Technology.*

The names of the Administrative Officers and Governing Boards of Harvard University will be found in the Official Register of Harvard University; and of the Administrative Officers and Governing Boards of the Massachusetts Institute of Technology, in the Official Bulletin of the Massachusetts Institute of Technology.

MILTON J. ROSENAU, M.D., A.M., *Director.*

ADMINISTRATIVE BOARD

WILLIAM T. SEDGWICK, Sc.D., *Chairman.*
MILTON J. ROSENAU, M.D., A.M.
GEORGE C. WHIPPLE, S.B., *Secretary.*

OFFICE HOURS

The office of the School for Health Officers is at the office of the Director, Professor ROSENAU, Harvard Medical School, Building E, Room 238, 240 Longwood Avenue, Boston, where the business of the School is conducted.

The office of the Chairman, Professor SEDGWICK, will be at the Henry L. Pierce Building, Massachusetts Institute of Technology, 30 Trinity Place, Boston, until September 1, 1916. After that date his office will be in the Department of Biology, Massachusetts Institute of Technology, Charles River Road, Cambridge.

The office of the Secretary, Professor WHIPPLE, who is also acting as Treasurer, is at Room 212, Pierce Hall, Oxford Street, Cambridge.

GENERAL INFORMATION

The School for Health Officers is conducted by Harvard University and the Massachusetts Institute of Technology, acting in coöperation, through an Administrative Board appointed for this purpose by both institutions.

The principal object of the School is to prepare young men for public health work and especially to fit them to occupy administrative and executive positions, as health officers, or members of boards of health, or secretaries, agents, or inspectors of health organizations. To this end, lectures, laboratory work, and other forms of instruction are offered by both institutions, and by special instructors from national, state, and local health agencies. The subjects embraced in the courses of study have been selected to cover a wide range, including medical, biological, hygienic and engineering sciences, together with practical health administration.

It is recognized that the requirements for public health service are broad and complicated, and that the country needs leaders in every community fitted to guide and instruct the people in the art of hygienic living; qualified to direct the expenditure of energy, time, and money in public health work into fruitful channels; and able to initiate plans to meet novel conditions as they arise. It is the object of the School for Health Officers to provide the scientific ground work of sanitary knowledge which underlies efficient health administration, together with some actual personal acquaintance with the theory and practice of modern public health service of the best types.

The opportunities for the practical study of the arts of public sanitation offered to students of the School for Health Officers are exceptional. The city of Boston is an important port of entry for foreign and domestic shipping and for immigration, and has fifty or more separate and independent municipalities in its immediate vicinity, while the state of Massachusetts is a community which has long been recognized as standing in the forefront of American commonwealths in almost all aspects of the science and practice of public health. To the advantages of location are added the resources of Harvard University and the Massachusetts Institute of Technology.

REQUIREMENTS FOR ADMISSION

Graduates in Medicine of Harvard University and other recognized medical schools will be admitted to the School for Health Officers upon their records and registered as candidates for the Certificate in Public Health. Bachelors of Science in Biology and Public Health of the Massachusetts Institute of Technology* and other recognized institutions will likewise be admitted and registered as candidates for the certificate.

Bachelors of Science in Sanitary Engineering of the Massachusetts Institute of Technology and other recognized institutions, who lack the necessary preparation in medical and biological sciences, will be admitted to the School upon their records, but as a rule will be required to spend at least one year in preparation before being accepted as candidates for the Certificate in Public Health.

Other graduates of colleges or technical or scientific schools will be admitted to the School without examination, provided their collegiate courses have included adequate instruction in physics, chemistry, biology, French and German; but they will be required in general to spend two or more years in preparation before being accepted as candidates for the Certificate in Public Health. Applications for admission to the School will be considered from those who have spent at least two years in a recognized college or technical or scientific school and have pursued satisfactory courses in physics, chemistry, biology, French and German, and also from persons of unusual experience or special qualifications; but such persons will as a rule be required to spend two or more years in preparation before being admitted as candidates for the certificate.

Special students not candidates for the Certificate in Public Health who desire to fit themselves for some special field will be admitted to the School, and may take any course or courses for which they are properly qualified, on approval of the Administrative Board.

While the medical degree is not a prerequisite for the Certificate in Public Health, candidates are advised to obtain the medical degree if possible before specializing in public health work. Experience teaches that preferment for employment and advancement to the higher positions come more readily to those who have a medical degree.

* See p. 104 of the M. I. T. Catalogue, December, 1915.

ADMISSION OF WOMEN

Women are admitted to the School for Health Officers on the same terms as men, and are equally eligible for the Certificate in Public Health. They are admitted to many of the courses given in the Harvard Graduate School of Medicine, but not to undergraduate courses in the Harvard Medical School or in Harvard College. If women require any of the latter courses these must be obtained elsewhere, preferably before entering the School for Health Officers.

APPLICATION AND REGISTRATION

Application for admission to the School should be made to the Director, and should be accompanied by a full statement of the applicant's qualifications, including his educational history and the studies which he desires to take, together with such certificates from other institutions as the Administrative Board may require.

Each student before being admitted to courses of instruction must register at the office of the Director and obtain a card, to be presented to his instructors.

Students in the School for Health Officers are regarded and registered as students of Harvard University and the Massachusetts Institute of Technology.

SCHEDULE OF COURSES

No uniform curriculum is provided for or required of candidates for the Certificate in Public Health, but each will be expected to pursue a schedule of courses to meet his individual needs. The schedule of courses to be pursued by each student is, however, subject to the approval of the Administrative Board. Assistance in making up this schedule of studies may be obtained from the members of the Administrative Board or the instructing staff. In general, the choice of studies must be such that the candidate on the completion of his course will have covered in a broad way the knowledge requisite for the varied duties of a public health officer.

To be entitled to the Certificate in Public Health, candidates must have satisfactorily completed courses in the following fundamental subjects: — anatomy, physiology, pathology, biological chemistry, sanitary biology, preventive medicine and hygiene, demography (vital statistics), and sanitary engineering. Inasmuch as the School is conducted and the certificate awarded by Harvard University and the Massachusetts Institute of Technology acting in coöperation, all candidates for the Certificate in Public Health will be required to include in their schedule some courses in both institutions.

Before the first day of each term every student should file with the Director a statement of his proposed schedule of courses for that term, which schedule to become effective must receive the approval of the Administrative Board. STUDENTS, WHO PLAN TO ENTER THE SCHOOL, SHOULD SEND AT AN EARLY DATE, a detailed statement of their previous studies and training, as well as A SCHEDULE OF THE COURSES, which they wish to pursue during the first year.

The courses available in the School are not restricted to those stated in this catalogue but may include subjects in any department of Harvard University or the Massachusetts Institute of Technology, provided the work is in harmony with the objects of the School and meets with the approval of the instructor in charge of the course and of the Administrative Board. Certain special courses will be given by instructors not otherwise connected with either institution, and practical work may be taken in city, state, or national health departments or in the hospitals of Boston, but such work must receive special approval in each instance and must be conducted under suitable restrictions.

Candidates for the Certificate in Public Health are required to complete satisfactorily their schedules of studies and, on the completion of the approved schedules, to submit to a general oral examination by the Administrative Board. This examination may cover not only the work in the School but previous studies and experience. EACH CANDIDATE IS ALSO REQUIRED TO MAKE A SANITARY SURVEY OF SOME CITY OR TOWN AND TO SUBMIT A REPORT ON OR BEFORE MAY 10th.

COURSES IN TROPICAL MEDICINE AND HYGIENE

Systematic courses in Tropical Medicine are offered at the Harvard School of Tropical Medicine under the direction of Professor Richard P. Strong. These courses have been included in this catalogue as they are open to properly qualified students in the School for Health Officers.

CERTIFICATE

The Certificate in Public Health (C. P. H.) will be granted to candidates who have satisfactorily completed the studies in their approved schedule, who have spent not less than one academic year in residence, and who have otherwise complied with all requirements. This certificate is issued by Harvard University and the Massachusetts Institute of Technology and signed by the president of each institution and by the members of the Administrative Board.

FEES

The tuition fee for candidates for the Certificate in Public Health and for all other students pursuing regular courses in the School is $250 per year and must be paid in advance as follows: —$150 on or before the first day of the first term, and $100 on or before the first day of the second term. For one half of the school year the fee is $150.

Special students who do not pay the regular fee must pay a special fee for each course.

A deposit of $50 is required in advance, against charges for breakage in the laboratories, of which any balance remaining at the end of the year will be returned. There will be no extra laboratory fees for instruction taken in course.

All fees must be paid to Professor Whipple, the acting Treasurer of the School. Checks should be made payable to the School for Health Officers.

OFFICERS OF INSTRUCTION AND LECTURERS

(*Arranged alphabetically*)

HERMAN M. ADLER, A.M., M.D., *Assistant Professor of Psychiatry, Harvard University,* and *Chief of Staff, Psychopathic Hospital.*

OAKES AMES, A.M., *Director of the Botanic Garden, Harvard University.*

THOMAS BARBOUR, PH.D., *Curator of Oceanica, and Associate Curator of Reptiles and Amphibians in the Museum of Comparative Zoölogy, Harvard University.*

LOUIS BELL, PH.D., *Consulting Electrical Engineer.*

ROBERT P. BIGELOW, S.B., PH.D., *Associate Professor of Zoölogy and Parasitology, Massachusetts Institute of Technology.*

JOSÉ PENTEADO BILL, A.B., M.D., *Assistant in Preventive Medicine and Hygiene, Harvard University.*

WILLIAM EUSTIS BROWN, PH.B., C.P.H., *Instructor in Public Health Administration, School for Health Officers.*

CHARLES T. BRUES, S.M., *Assistant Professor of Economic Entomology, Harvard University.*

HUGH CABOT, A.B., M.D., *Assistant Professor of Genito-Urinary Surgery, Harvard University.*

RICHARD C. CABOT, A.B., M.D., *Assistant Professor of Medicine, Harvard University.*

IDA CANNON, *Head Worker, Social Service Department, Massachusetts General Hospital.*

WALTER B. CANNON, A.M., M.D., *George Higginson Professor of Physiology, Harvard University.*

WILLIAM E. CASTLE, PH.D., *Professor of Zoölogy, Harvard University.*

CHARLES V. CHAPIN, M.D., S.D., *Superintendent of Health, Providence, R. I.*

WILLIAM T. COUNCILMAN, M.D., A.M., LL.D., *Shattuck Professor of Pathological Anatomy, Harvard University.*

DAVID L. EDSALL, A.M., M.D., S.D., *Jackson Professor of Clinical Medicine, Harvard University.*

HAROLD C. ERNST, M.D., A.M., *Professor of Bacteriology, Harvard University.*

MARSHAL FABYAN, A.B., M.D., *Assistant Professor of Comparative Pathology, Harvard University.*

OTTO FOLIN, S.B., PH.D., *Hamilton Kuhn Professor of Biological Chemistry, Harvard University.*

FRANCIS B. GRINNELL, A.B., M.D., *Instructor in Preventive Medicine and Hygiene, Harvard University.*

SAMUEL B. GRUBBS, M.D., *U. S. Public Health Service, Quarantine Officer, Port of Boston.*

SELSKAR M. GUNN, S.B., *Associate Professor of Sanitary Biology and Public Health, Massachusetts Institute of Technology.*

THOMAS F. HARRINGTON, M.D., *Deputy Commissioner (Medical), Massachusetts State Board of Labor and Industries, formerly Director of the Department of School Hygiene of the City of Boston.*

JOHN B. HAWES, 2D, A.B., M.D., *Secretary, Board of Trustees, Massachusetts Hospital for Consumptives.*

ROBERT N. HOYT, S.B., *Lecturer on Public Health Administration, Massachusetts Institute of Technology.*

EDWARD A. INGHAM, S.B., *Instructor in Biology, Massachusetts Institute of Technology.*

EUGENE R. KELLEY, M.D., *Director of the Division of Communicable Diseases, Massachusetts State Department of Health.*

ROBERT W. LOVETT, A.B., M.D., *John B. and Buckminster Brown Professor of Orthopedic Surgery, Harvard University.*

HERMANN C. LYTHGOE, *Director of the Division of Food and Drugs, Massachusetts State Board of Health.*

ALLAN J. McLAUGHLIN, M.D., *Health Commissioner, Massachusetts State Department of Health.*

GEORGE B. MAGRATH, M.D., *Medical Examiner of Suffolk County.*

FRANK B. MALLORY, A.M., M.D., *Associate Professor of Pathology, Harvard University.*

JOHN L. MORSE, A.M., M.D., *Professor of Pediatrics, Harvard University.*

JOHN F. NORTON, PH.D., *Assistant Professor of Chemistry of Sanitation, Massachusetts Institute of Technology.*

EDWIN H. PLACE, M.D., *Assistant Professor of Pediatrics, Harvard University,* and *Physician-in-Chief, South Department, Boston City Hospital.*

WILLIAM H. POTTER, D.M.D., *Professor of Operative Dentistry, Harvard University.*

SAMUEL C. PRESCOTT, S.B., *Professor of Industrial Microbiology, Massachusetts Institute of Technology.*

MILTON J. ROSENAU, M.D., A.M., *Professor of Preventive Medicine and Hygiene, Harvard University.*

M. VICTOR SAFFORD, M.D., *U. S. Public Health Service, Medical Inspector of Immigrants, Boston.*

WILLIAM T. SEDGWICK, PH.D., SC.D., *Professor of Biology and Public Health, Massachusetts Institute of Technology.*

A. WATSON SELLARDS, A.M., M.D., *Associate in Tropical Medicine, Harvard University.*

FRANCIS H. SLACK, M.D., *Director of the Bacteriological Laboratory, City Department of Health, Boston.*

WILSON GEORGE SMILLIE, A.B., M.D., *Instructor in Preventive Medicine and Hygiene, Harvard University.*

ELMER E. SOUTHARD, M.D., A.M., *Bullard Professor of Neuropathology, Harvard University,* and *Director of the Psychopathic Department, Boston State Hospital.*

CHARLES B. SPRUIT, A.B., M.D., *Charles Follen Folsom Teaching Fellow in Hygiene, Harvard University.*

PERCY G. STILES, S.B., PH.D., *Instructor in Physiology and Personal Hygiene, Massachusetts Institute of Technology; Instructor in Physiology, Harvard University.*

RICHARD P. STRONG, PH.B., M.D., S.D., *Professor of Tropical Medicine, Harvard University.*

HARVEY PARKER TOWLE, A.B., M.D., *Lecturer on Dermatology, Harvard University.*

CLAIR E. TURNER, A.M., *Instructor in Biology, Massachusetts Institute of Technology.*

ERNEST E. TYZZER, M.D., *Assistant Professor of Pathology, Harvard University.*

FREDERICK H. VERHOEFF, A.M., M.D., *Assistant Professor of Ophthalmic Research, Harvard University.*

EUGENE WAMBAUGH, A.M., LL.B., LL.D., *Langdell Professor of Law, Harvard University.*

ROBERT DEC. WARD, A.M., *Professor of Climatology, Harvard University.*

ROBERT S. WESTON, S.B., A.M., *Assistant Professor of Public Health Engineering, Massachusetts Institute of Technology.*

WILLIAM M. WHEELER, PH.D., *Professor of Economic Entomology, Harvard University.*

GEORGE C. WHIPPLE, S.B., *Gordon McKay Professor of Sanitary Engineering, Harvard University and Massachusetts Institute of Technology.*

MELVILLE C. WHIPPLE, *Instructor in Sanitary Biology,* and *Sanitary Inspector, Harvard University.*

S. BURT WOLBACH, M.D., *Associate Professor of Bacteriology, Harvard University.*

ALPHEUS G. WOODMAN, S.B., *Assistant Professor of Food Analysis, Massachusetts Institute of Technology.*

SUBJECTS AND COURSES ARRANGED BY GROUPS

The courses listed as Regular Courses include those which extend over a half-year or more, or those which demand an equivalent amount of time within a shorter period than a half-year. From these the student is expected to make his principal selections and in them he is expected to do most of his work. In addition to these regular courses many special courses are open to members of the School.

Attention is called to the fact that some courses may be taken during the summer, thus making it possible for those who desire to do so to carry on their work continuously throughout the year.

For full description of courses, see page indicated at right.

REGULAR COURSES

Group I. Preventive Medicine and Sanitary Science

PAGE

110. Principles of Sanitary Science and Public Health. Professors W. T. Sedgwick and S. M. Gunn 18
111. Preventive Medicine and Hygiene. Professor M. J. Rosenau and assistants 18
112. Public Health Problems. Professor W. T. Sedgwick . . 18
113. Epidemiology. Professor W. T. Sedgwick and Dr. H. P. Walcott 18
114. Tropical Medicine. Professor R. P. Strong 19

Group II. Personal Hygiene

210. Personal Hygiene. Dr. P. G. Stiles 19
211. Industrial Hygiene and Sanitation. Professor S. M. Gunn . 19
212. Hygiene of Ventilation and Heating. Professor W. T. Sedgwick 20

Group III. Public Health Administration

310. Public Health Methods. Mr. W. E. Brown 20
311. Practical Health Administration. Dr. Allan J. McLaughlin and Associates in the State Department of Health 20
312. Sanitary Law. Professors W. T. Sedgwick, R. S. Weston, and S. M. Gunn 20
313. Public Health Practice. Professor S. M. Gunn and Mr. Turner 20
314. Sanitation of Houses and Public Buildings. Professor S. M. Gunn 21
315. Public Health Administration. Professor S. M. Gunn . . . 21

Group IV. Sanitary Biology and Sanitary Chemistry

410. Protozoölogy. Professor E. E. Tyzzer 21
411. Entomology. Professor W. M. Wheeler and Asst. Professor C. T. Brues 21
412. Advanced Bacteriology. Mr. E. A. Ingham 22
413. Elementary and General Bacteriology. Professors H. C. Ernst and S. B. Wolbach and assistants 22
414. Control of City Milk Supplies. Professor S. C. Prescott . . 22
415. Bacteriology of Water and Sewage. Professor S. C. Prescott and Mr. Ingham 23
416. Parasitology. Professor R. P. Bigelow 23
417. Helminthology. Dr. A. W. Sellards 23
418. Analysis of Water, Sewage, and Air. Mr. Melville C. Whipple 23
419. Water and Air Analysis. Professor J. F. Norton 24
420. Water Supplies and Waste Disposal. Professor J. F. Norton 24
421. Food Analysis. Professor A. G. Woodman 24
422. Advanced Food Analysis. Professor A. G. Woodman . . . 24
423. General Bacteriology. Professor S. C. Prescott and Mr. Ingham 24
424. Elementary Bacteriology. Mr. Melville C. Whipple . . 25
425. Bacteriology in Relation to Refrigeration, Canning and Food Conservation. Professor Prescott 25
426. Bacteriology of Air, Water and Foods. Professor Prescott 25

Group V. Special Pathology

510. Pathology of Tropical Diseases. Professor F. B. Mallory . 26

Group VI. Communicable Diseases

610. Communicable Diseases. Dr. E. H. Place 26
611. Communicable Diseases (Interneship at South Department, Boston City Hospital). Dr. E. H. Place 26
612a. Biology of Infectious Diseases. I. Professor S. M. Gunn. 26
612b. Biology of Infectious Diseases. II. Professor S. M. Gunn. 27
613. Board of Health Laboratory Diagnosis. Dr. Francis H. Slack 27
614. Public Health Laboratory Methods. Professor S. M. Gunn and associates 27

Group VII. Sanitary Engineering

710. Sanitary Engineering. Professor G. C. Whipple and assistants 27
711. Municipal Administration. Professor G. C. Whipple and assistants 27
712. Research in Sanitation. Professor G. C. Whipple. 28
713. Biology of Water and Sewage Purification. Mr. Turner . 28

Group VIII. Demography

810. Vital Statistics. Professor G. C. Whipple and assistants . . 28
811. Research in Demography. Professor G. C. Whipple and assistants 29

Group IX. Courses in Medical and Other Sciences

In addition to the courses and lectures given above, other courses are open to students registered in the School for Health Officers at the Massachusetts Institute of Technology, at Harvard College, at the Harvard Medical and Harvard Dental Schools.

At the Harvard Medical School there are courses in Anatomy, Embryology, Physiology, Biological Chemistry, Pathology, and Bacteriology.

At the Massachusetts Institute of Technology there are courses in General Physiology, Physiological Laboratory, Vertebrate Anatomy, Sanitary Engineering, General Biology, and Bacteriology. Also courses in Economic and Sanitary Entomology, Camp and Ship Sanitation, and Public Health Field Work.

For the details of these courses the catalogues of Harvard University and the Massachusetts Institute of Technology should be consulted. Information regarding them may also be obtained from the Director of the School for Health Officers.

Group X. Special Courses and Lectures

PAGE

1000. Tropical Climatology. Professor R. DeC. Ward 29
1001. Comparative Pathology of Tropical Diseases. Dr. Marshal Fabyan 29
1002. Genetics and Eugenics. Professor W. E. Castle 29
1003. Industrial Hygiene. Dr. T. F. Harrington 30
1004. Infant Mortality. Professor J. L. Morse 30
1005. Legal Medicine. Dr. George B. Magrath 30
1006. Maritime Quarantine. Dr. S. B. Grubbs 30
1007. Medical Inspection of Aliens. Dr. M. V. Safford 30
1008. Mental Hygiene. Professor E. E. Southard and associates 31
1009. Municipal Sanitation. Dr. C. V. Chapin 31
1010. Ocular Hygiene. Dr. F. H. Verhoeff and Dr. Louis Bell 31
1011. Oral Prophylaxis. Professor W. H. Potter 32
1012. Personal Hygiene. Professor W. B. Cannon 32
1013. Tropical Plants. Mr. Oakes Ames 32
1014. Posture and Prevention of Deformities. Professor R. W. Lovett 33
1015. Sanitary Law—Legal Powers of Health Officers. Professor Eugene Wambaugh 33
1016. School Hygiene. Dr. T. F. Harrington 33
1017. Social Service Work. Professor R. C. Cabot and Miss Ida Cannon 34
1018. Tropical Dermatology. Dr. H. P. Towle 34
1019. Tuberculosis. Dr. J. B. Hawes, 2d 34
1020. Venereal Prophylaxis. Dr. Hugh Cabot 35
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DESCRIPTION OF COURSES*

Group I. Preventive Medicine

110. *Principles of Sanitary Science and Public Health.* (Course, M. I. T. 756.)
For Graduates and Undergraduates.
Given at M. I. T.
Professors W. T. Sedgwick and S. M. Gunn.

Fourth year, second term, one hour a week. Fifteen lectures (richly illustrated by stereopticon, diagrams and charts). The principal topics dealt with are health and disease; ancient and modern theories of disease; parasitism; toxins and antitoxins; theories of vital resistance, immunity, etc.; vaccination; epidemiology; and preventive sanitation.

111. *Preventive Medicine and Hygiene.*
For Graduates and Undergraduates.
Tuesday and Thursday, from 2 to 3 P.M., Monday and Wednesday, from 3 to 5 P.M., second half-year.
Given at the Harvard Medical School, Lecture Room, Bldg. E.
Professor M. J. Rosenau and assistant.

This is a general course, consisting of lectures and demonstrations, and laboratory work designed to give a bird's-eye view of the important facts and principles in preventive medicine. The subjects covered are those found in Rosenau's " Preventive Medicine and Hygiene."

112. *Public Health Problems.* (Course, M. I. T. 755.)
For Graduates and Undergraduates.
Given at M. I. T.
Professor W. T. Sedgwick.

First and second terms, fourth year, two hours a week. The course is essentially one in the theory and practice of Hygiene and Sanitation, with discussions of the origin and trend of the underlying principles of sanitary science, public health science and vital statistics.

113. *Epidemiology.* (Course, M. I. T. 765.)
For Graduates only.
Given at M. I. T.
Professor W. T. Sedgwick and Dr. H. P. Walcott.

*Tabular Views, showing the hours of subjects at the Institute of Technology, may be obtained at the office of the Institute, Charles River Road, Cambridge, one week before the beginning of each term.

One hour weekly in the first half-year, devoted to a detailed consideration of the natural history of epidemics, especially typhoid fever, tuberculosis, scarlet fever, etc., in reference to public water supplies, milk supplies, and similar causative factors; the intention being to enable the student by a critical consideration of instructive examples to prepare himself for the interpretation of corresponding cases arising in public health practice.

114. *General Course in Tropical Medicine.*
(Offered by the School of Tropical Medicine, and open to students registered in the School for Health Officers.)
Given at the Harvard Medical School on dates to be announced.
Professor Richard P. Strong.

This course will include lectures, laboratory work, and bedside demonstrations, with particular reference to the more important tropical diseases. Particular attention will be paid to the laboratory diagnosis of the various diseases considered.

Group II. Personal Hygiene

210. *Personal Hygiene.* (Course, M. I. T. 724.)
For Graduates and Undergraduates.
Given at M. I. T.
Dr. P. G. Stiles.

Second term, fourth year, two hours a week. Lectures designed to give an accurate idea of the operation and care of the human mechanism. The course includes an advanced discussion of such topics as the choice of foods, the effects of good and bad air upon the body, muscular activity, fatigue, sleep, rest, recreation, the care of the eyes and other sense organs, bathing and baths, the dangers of the sedentary life, and similar subjects.

211. *Industrial Hygiene and Sanitation.* (Course, M. I. T. 753.)
For Graduates and Undergraduates.
Given at M. I. T.
Professor S. M. Gunn.

First term, fourth year, two hours a week. The course deals with the various prejudicial effects of factory life upon health, including occupational accident, industrial poisonings and the effects of defective ventilation and of dusty trades upon the prevalence of tuberculosis and other diseases. The principles are discussed by which these dangers can be minimized under existing conditions of American factory life.

212. *Hygiene of Ventilation and Heating.* (Course, M. I. T. 760.)
For Graduates and Undergraduates.
Given at M. I. T.
Professor W. T. Sedgwick.

Lectures and reports once a week in the first half-year. The regulation of the body temperature, the sources and remedies of discomfort due to bad air, overheating, overcrowding, etc., in private rooms and public halls.

Group III. Health Administration

310. *Public Health Methods.*
Required of all students registered in the School for Health Officers.
Mr. W. E. Brown.
A comprehensive course in the principles and practice of public health methods.

311. *Practical Health Administration.*
For students registered in the School for Health Officers.
Special Exercises arranged to be given at the State Department of Health, by Dr. Allan J. McLaughlin, Dr. Eugene R. Kelley, Mr. H. C. Lythgoe, and other Directors of Divisions.

This course is largely of a practical nature and includes the following topics: —
The State Administration of: Water supply and sewerage; food and drugs; state inspectors of health; cold storage; slaughtering; milk; rendering plants; water companies; sanatoria; prisons; police stations; the administrative control of diseases dangerous to the public health.

312. *Sanitary Law.* (Course, M. I. T. 772.)
For Graduates and students of the School for Health Officers.
Given at M. I. T.
Professors W. T. Sedgwick, R. S. Weston, and S. M. Gunn.

Second term, graduate year, one hour a week. Lectures upon the status of sanitary procedures under the common and the statute law. Consideration will be paid to the police power as allotted under the Constitution, to federal, state and municipal powers. Legal procedures in times of epidemic, the law of quarantine, water supply, sewerage and drainage, nuisances, vaccination, and the like.

313. *Public Health Practice.*
For Graduates and Undergraduates.
Given at M. I. T.
Professor S. M. Gunn and Mr. Turner.

Second term, fourth year, four hours a week. This course takes up in detail the work of the modern health officer and his assistants. Instruction is by means of lectures, informal discussions and recitations. The course is designed to show how the health officer makes practical use of the scientific facts taught in the preparatory courses.

314. *Sanitation of Houses and Public Buildings.* (Course, M. I. T. 762.)
For Graduates and students of the School for Health Officers.
Given at M. I. T.
Professor S. M. Gunn.

One hour a week in the first half-year. A study of the sanitary aspects of the housing problem as found in American cities today.

315. *Public Health Administration.* (Course, M. I. T. 773.)
For Graduates only.
Given at M. I. T.
Professor S. M. Gunn.

Second half-year, one hour a week. Particular attention is paid to the organization of State and Municipal Health Departments. The administrative duties of executive health officers and other health officials are taken up and considered at length. The course is supplemented by careful consideration of the existing organization of State and Municipal Departments of Health.

Group IV. Sanitary Biology and Sanitary Chemistry

410. *Protozoölogy.*
(Offered by the School of Tropical Medicine, and open to students registered in the School for Health Officers.)
Given at the Harvard Medical School during October, November and December on dates to be announced.
Professor E. E. Tyzzer.

The course in Protozoölogy will include a general discussion of the morphology and life history of the more important human protozoan parasites, such as the amoebae, flagellata, sporozoa, and ciliata. Their relations to their definite and to intermediate hosts will also be discussed, together with phenomena of immunity. Methods for the cultivation of certain parasites and suitable procedures for collecting, staining, and mounting will be discussed.

411. *Entomology.*
(Offered by the School of Tropical Medicine, and open to students registered in the School for Health Officers.)
Given at the Bussey Institution on dates to be announced.
Professor William M. Wheeler and Asst. Professor C. T. Brues.

This course will consist of a few general lectures on the structure and classification of the Arthropoda, followed by a more detailed account of the Arthropoda known to be concerned and likely to be concerned in the transmission of human and animal diseases or in the infliction of local injuries and physiological disturbances.

Laboratory work and demonstrations will also constitute an important feature of the course and will provide for training in the dissection of insects, in the principal methods of studying their life histories and habits, and in their identification by means of dichotomic tables and from technical descriptions. The student will be provided with a list of most useful monographs and reference books on blood-sucking and disease-disseminating arthropoda and should acquire an extensive acquaintance with this literature.

The following orders, families and genera will be considered: —

1. Insecta, with particular reference to the diptera, suctoria, siphunculata, hemiptera, hymenoptera, and lepidoptera.
2. Myriopoda, including the scolopendridae.
3. Arachnida, including the scorpionidea, araneina, and acari.

412. *Advanced Bacteriology.* (Course, M. I. T. 734.)
For Graduates and Undergraduates.
Given at M. I. T.
Mr. E. A. Ingham.

Three hours weekly in the first half-year. Preparation required.

413. *Elementary and General Bacteriology.*
For Students in the School for Health Officers.
Daily except Saturday during October and November from 2 to 5.30 P.M.
Given at the Harvard Medical School.
Professors Harold C. Ernst, S. B. Wolbach, and others.

414. *Control of City Milk Supplies.* (Course, M. I. T. 743.)
Open to Graduates and Students of the School for Health Officers.
Given at M. I. T.
Professor S. C. Prescott.

First term, four hours a week. Lectures, reports and field work. The course takes up special problems of the milk supply of large cities. The student will be expected to make personal investigations and critical studies of different systems of supply, such as those of small companies and large contractors; of bacteriological and sanitary control as practised in different cities and different countries; of pasteurization; inspection; transportation and distribution as well as the methods of condensing, concentrating, refrigerating, etc.

415. *Bacteriology of Water and Sewage.* (Course, M. I. T. 732.)
For Graduates and Undergraduates.
Given at M. I. T.
Professor S. C. Prescott and Mr. Ingham.

A course in the first term, two hours a week, devoted largely to laboratory work on the examination of the various classes of waters, sewage and sewage effluents. Instruction is given in the most approved methods of water examination for pollution and special emphasis is placed on proper interpretation of results.

Textbook: Prescott and Winslow, "Elements of Water Bacteriology."

416. *Parasitology.* (Course, M. I. T. 707.)
For Graduates and Undergraduates.
Given at M. I. T.
Professor R. P. Bigelow.

Two hours weekly in second half-year. Lectures and demonstrations with special reference to animal parasites, and their relation to diseases in man and the domestic animals. Preparation required, M. I. T. Course 705 (Invertebrate Zoölogy).

417. *Helminthology.*
(Offered by the School of Tropical Medicine, and open to students registered in the School for Health Officers.)
Given at the Harvard Medical School on dates to be announced.
Dr. A. W. Sellards.

The course in Helminthology will include the differentiation and classification of species and instruction in collecting, preserving, staining, and mounting of the parasites and their ova, and the cultivation of the parasites when possible. The human cestodes, tremadoes, and nematodes will be considered in detail. Certain species of the acanthocephala, the pentastomida and hirudinea will also be discussed.

418. *Analysis of Water, Sewage, and Air.*
For students in the School for Health Officers.
Hours to be arranged with the instructor. 18 hours a week. First half-year.
Given at Pierce Hall, Oxford Street, Cambridge.
Mr. Melville C. Whipple.

This is a comprehensive course in the physical, chemical, microscopical, and bacteriological analysis of water, sewage, and air, and covers the subject in a detailed manner. It is intended for those who

wish to obtain a working knowledge of water and sewage analysis sufficient to enable them to secure positions in this field of work.

A general knowledge of the principles of qualitative and quantitative analysis is prerequisite.

419. *Water and Air Analysis.* (Course, M. I. T. 520.)
For Graduates and Undergraduates.
Given at M. I. T.
Professor J. F. NORTON.

Three hours weekly in the first half-year. A course in Sanitary Chemistry. Preparation required, M. I. T. Course 512 (Quantitative Analysis).

420. *Water Supplies and Waste Disposal.* (Course, M. I. T. 522.)
For Graduates and Undergraduates.
Given at M. I. T.
Professor J. F. NORTON.

One lecture and two laboratory hours weekly on the chemical problems of water supply, water purification, and the disposal and purification of wastes. Preparation required, M. I. T. Course 520.

421. *Food Analysis.* (Course, M. I. T. 525.)
For Graduates and Undergraduates.
Given at M. I. T.
Professor A. G. WOODMAN.

Seven lectures and thirty-eight hours of laboratory work in the first or second half-year. Dealing with the character, purity, and nutritive value of common food materials and food adulteration. Preparation required, M. I. T. Course 512 (Quantitative Analysis).

422. *Advanced Food Analysis.* (Course, M. I. T. 526.)
For Graduates and Undergraduates.
Given at M. I. T.
Professor A. G. WOODMAN.

Five hours a week of laboratory work and class-room exercises in the first half-year. Methods of attacking chemical problems arising under state and municipal food control. Food inspection and criticism of methods of food analysis. Preparation required, M. I. T. Course 525.

423. *General Bacteriology.* (Course, M. I. T. 730.)
For Graduates and Undergraduates.
Given at M. I. T.
Professor S. C. PRESCOTT and Mr. INGHAM.

First term, third year, five hours a week. Lectures, recitations and laboratory work. A fundamental course in the biology of the bacteria consisting of a general survey of the bacteria, their distribution, activity, place in nature, and their relation to the environment. Selected types of bacteria are studied in detail both morphologically and physiologically.

424. *Elementary Bacteriology.* (Harvard University, S2.)
For Graduate and Undergraduate Students.
Mondays, Wednesdays, Fridays at 9 A.M. and laboratory work, 6 hours a week.
Given at Pierce Hall, Oxford Street, Cambridge, Mass., during first term.
Mr. MELVILLE C. WHIPPLE.

This is a course for students who have never studied bacteriology, but who wish to obtain a general understanding of the relation of bacteria to the processes of nature, to chemistry, sanitary science, and the public health. The subject-matter of the course will include the technique of isolation and identification of species, the examination of soil, water, and foods; bacteria in the industries; the spread of communicable diseases; fermentation, sewage treatment, sludge disposal, and water purification.

425. *Bacteriology in Relation to Refrigeration, Canning and Food Conservation.* (Course, M.I.T. 742.)
Given at M.I.T.
Professor PRESCOTT.

Second term, graduate year, two hours a week. A course devoted to special studies on the microbiological phases of different methods of food conservation. The viability of bacteria and the changes produced by them at low temperatures; the proper working out of the factors of time, pressure and temperature in canning; and the study of the inhibitions produced in bacteria by boron compounds, essential oils, condiments, acids and other food preservatives are specimens of the types of problems to be studied, The student is required to investigate both the economic and the public health aspects of the subject.

426. *Bacteriology of Air, Water and Foods.* (Course, M.I.T. 753.)
Given at M.I.T.
Professor PRESCOTT.

Second term, third year, five hours a week. Lectures and a large amount of laboratory practice in the bacteriological examination of air, waters, milks and dairy products, eggs, oysters, fruits and many other

food preparations. Stress is laid on the development of methods for the detection, isolation and estimation of intestinal, fermentative, putrefactive and pathogenic types of bacteria and on care and accuracy in the interpretation of results.

Group V. Special Pathology

510. *Pathology of Tropical Diseases.*
(Offered by the School of Tropical Medicine, and open to students registered in the School for Health Officers.)
Given at the Harvard Medical School on dates to be announced.
Professor F. B. Mallory.

This course will include the study of the macroscopic and histological lesions in the more important tropical diseases.

Group VI. Communicable Diseases

610. *Communicable Diseases — Clinical Course.*
For qualified students registered in the School for Health Officers.
Afternoons during January, 2 to 5 o'clock.
Given at the South Department, Boston City Hospital, 745 Massachusetts Avenue.
Dr. Edwin H. Place, Assistant Professor of Pediatrics, Harvard Medical School, and Physician-in-Chief, South Department, Boston City Hospital.

This course offers an opportunity for the study of the more common contagious diseases, more especially measles, scarlet fever, diphtheria, whooping cough, etc. Their recognition, variation, complications, manner of spread and treatment will be studied at the bedside and in short conferences after the ward visits. The results of treatment and management will be considered both from series of cases in the wards, and from the incidence and mortality in the city as a whole.

611. *Communicable Diseases. — Interneship.*
For qualified students registered in the School for Health Officers.
One to four months, as arranged by agreement.
South Department, Boston City Hospital, 745 Massachusetts Ave.

Open to a limited number of specially qualified students, by arrangement with Professor E. H. Place.

612a. *Biology of Infectious Diseases 1.* (Course, M. I. T. 750.)
For Graduates and Undergraduates.
Given at M. I. T.
Professor S. M. Gunn.

Second term, third year, one hour a week. This course deals with the fundamental biological facts of infection, resistance and immunity.

612b. *Biology of Infectious Diseases 2.* (Course, M. I. T. 751.)
Professor S. M. GUNN.

First term, fourth year, two hours a week. A continuation of Biology of Infectious Diseases I. The biological characteristics of infectious diseases of special interest to the sanitarian are considered in detail.

613. *Board of Health Laboratory Diagnosis.*
For students registered in the School for Health Officers.
Dates are to be arranged for personally with the Instructor.
Given at the Bacteriological Laboratory, City Hall Annex, Boston.
Dr. F. H. SLACK.

This course will enable small groups of students to observe the routine work of a bacteriological laboratory, and, if properly qualified, to participate in it.

614. *Public Health Laboratory Methods.* (Course, M. I. T. 738.)
For Graduates and Undergraduates.
Given at M. I. T.
Professor S. M. GUNN and associates.

Second term, fourth year, three hours a week. In this course the practical methods in use in state and municipal bacteriological laboratories are considered. Training is given in the cultural diagnosis of diphtheria, examination of specimens for tuberculosis, the Widal reaction in typhoid fever, the microscopical diagnosis of malaria, the complement fixation test, etc.

GROUP VII. SANITARY ENGINEERING

710. *Sanitary Engineering.* (Courses, M. I. T. 177 and 178.)
Three exercises a week throughout the year.
Given at M. I. T.
Professor WHIPPLE and assistants.

This is a general course in the principles and practice of sanitary engineering and covers the entire subject in a comprehensive manner by means of lectures, recitations, assigned reading, excursions, etc.

711. *Municipal Administration.* (Harvard University, Government 31.)
For students registered in the School for Health Officers, and for Harvard Graduates and Undergraduates.
Monday, Wednesday, Friday, at 11 A.M., throughout the year.
Given at Cambridge.
Professor WHIPPLE and assistants.

This course will deal with the underlying principles of sanitary engineering and municipal sanitation. The topics considered will in-

clude city planning, housing, fire prevention, street paving, public water supplies and water purification, the pollution of streams, methods of sewage disposal, garbage disposal, street cleaning, hygienic housing, plumbing, ventilation, the effect of insanitary conditions on the public health. Attention will be given to the operation, cost, and efficiency of works rather than to construction, but important works in America and in Europe will be described.

There will be two lectures and one class exercise a week.

Reports upon assigned topics will be required.

A general knowledge of physics and chemistry is required of students in this course, as well as a reading knowledge of French and German.

712. *Research in Sanitation.* (Harvard University, Hygiene and Sanitation, 20*a*.)

Professor WHIPPLE.

Special investigations in the Laboratory of Sanitary Engineering, Pierce Hall, Cambridge, may be undertaken by students in the School for Health Officers by arrangement with the instructor.

713. *Biology of Water and Sewage Purification.* (Course M.I.T. 739.)

For Graduates only.

Given at M. I. T.

Mr. C. E. TURNER.

First term, fourth year, one hour a week. Conferences and studies upon the biological problems of water purification and sewage disposal, the object in view being to bring the student, by immediate contact with actual problems, into vital relations with the most recent state of the art. The course is continued in the second term as a part of 757.

GROUP VIII. DEMOGRAPHY

810. *Vital Statistics.* (Course, M. I. T. 190.)

Open to students in the School for Health Officers.

Given at M. I. T.

Professor WHIPPLE and assistants.

A course of two hours per week in the first term in vital, social, and sanitary statistics arranged especially for students who intend to enter the public health service. It will treat of the principles of statistics, population, registration, births and marriages, general death rates, corrected death rates, specific death rates, morbidity, causes of death, preparation of tables, plotting, construction of diagrams, graphical display of data, and, in general, the application of statistics to state and municipal problems.

811. *Research in Demography.*
For students registered in the School for Health Officers.
Given at Harvard University, Cambridge, during the second term on dates to be announced.
Professor WHIPPLE and assistants.

GROUP X. SPECIAL COURSES AND LECTURES

1000. *Tropical Climatology.*
(Offered by the School of Tropical Medicine, and open to students registered in the School for Health Officers.)
Given at Cambridge on dates to be announced.
Professor ROBERT DECOURCY WARD.

This course will include a brief discussion of climate in general. Controls of climate, with special reference to tropical climatology: latitude; land and water (continental and marine climates); altitude (mountain climates); exposure; prevailing winds; ocean currents; mountain barriers; vegetation. — Classification of climates. — Characteristics of tropical climates: climate and weather in the tropics; temperature; the seasons; pressure; winds and rainfall; land and sea breezes; thunderstorms; cloudiness; intensity of sky-light and twilight. — Climatic subdivisions: the equatorial belt; trade wind belts; monsoon belts; mountain climates. — The climatologist's view of acclimatization in the tropics. — The life of man in the tropics, as controlled by tropical climates.

1001. *Comparative Pathology of Tropical Diseases.*
(Offered by the School of Tropical Medicine, and open to udentsst registered in the School for Health Officers.)
Given at Harvard Medical School on dates to be announced.
Asst. Professor MARSHAL FABYAN.

This course will consist of a discussion of the etiology, pathology and immunology of the more important infections and parasitic diseases of domestic animals prevalent in the tropics (piroplasmoses, trypanosomiases, rinder pest, etc.). The preparation of smallpox vaccine for the tropics will also be dealt with.

1002. *Genetics and Eugenics.*
For students registered in the School for Health Officers.
Monday, Wednesday, and Friday, from 9 to 10 A.M., second half-year.
Given in the Zoölogical Lecture Room, Harvard University, Cambridge.
Professor W. E. CASTLE.

The reproduction of animals, the origin of new races; the influence of heredity and of environment; applications to animal breeding and human society.

1003. *Industrial Hygiene.*
For students registered in the School for Health Officers.
One lecture on date to be announced.
Given at the Harvard Medical School, Amphitheatre, Bldg. E.
Dr. T. F. HARRINGTON.

The lecture includes a general survey of the industrial diseases, their causes and their prevention.

1004. *Infant Mortality.*
For students registered in the School for Health Officers.
Four lectures on dates to be announced.
Given at the Harvard Medical School, Amphitheatre, Bldg. E.
Professor JOHN LOVETT MORSE.

These lectures will take up the statistics of infant mortality, the social, economic, and medical problems involved, the causes, and methods of prevention, the means at present in use to combat infant mortality, and the possibilities for their extension in the future. An opportunity will be given to study the work actually being done in this direction in Boston at present.

1005. *Legal Medicine.*
For students registered in the School for Health Officers.
Given at Harvard Medical School on dates to be announced.
Dr. GEORGE B. MAGRATH.

This course deals with medicine in its relation to the requirements of law. Further details are given in the catalogue of the Harvard Medical School.

1006. *Maritime Quarantine.*
For students registered in the School for Health Officers.
Two lectures on date to be announced.
To be given at the Harvard Medical School, Amphitheatre, Bldg. E.
Dr. S. B. GRUBBS.

These lectures will take up the methods employed in protecting the country from the introduction of communicable diseases through seaport and border towns. The methods employed at quarantine stations will be discussed.

1007. *Medical Inspection of Aliens.*
For students registered in the School for Health Officers.
Friday, from 5 to 6 P.M., March 19 and 26. Dates for practical exercises to be arranged with the Instructor.

The lectures will be given at the Harvard Medical School, Amphitheatre of Bldg. E; the practical exercises at the steamship wharves.
Dr. M. V. SAFFORD.

This course will consist of two lectures, followed by practical exercises, to enable the students to observe the methods adopted at large ports of entry for conducting the medical examination of arriving alien passengers required by the United States Immigration Laws. Dr. SAFFORD'S office is at the U. S. Immigration Station, Long Wharf, Tel. No. Main 380 or Main 381. Arrangements should be made with Dr. SAFFORD for the practical exercises.

1008. *Mental Hygiene.*

For students registered in the School for Health Officers.

Six lectures given in the Assembly Room of the Psychopathic Hospital, 74 Fenwood Road, Boston.

Dr. E. E. SOUTHARD, Professor of Neuropathology, Harvard Medical School, and Director of the Psychopathic Department, Boston State Hospital, and associates.

1009. *Municipal Sanitation.*

For students registered in the School for Health Officers.

Three or more lectures given at the Harvard Medical School, Amphitheatre, Building E, on dates to be announced.

Dr. CHARLES V. CHAPIN, Superintendent of Health, Providence, R. I.

1. Efficiency of public health measures.
2. Public Health Education.
3. Nuisance problems.

1010. *Ocular Hygiene.*

For students registered in the School for Health Officers.

Three lectures given at the Harvard Medical School, Amphitheatre, Bldg. E, on dates to be announced.

Dr. F. H. VERHOEFF and Dr. LOUIS BELL.

This course will consist of two lectures as follows: —

1. Elementary optical principles. Tests for visual acuity. Tests for strabismus. Effects of eye-strain. School myopia. Paper and type for school books.

2. Diseases of the eye with which the health officer should be acquainted. Ophthalmia neonatorum, gonorrhoeal conjunctivitis in adults, phlyctenular conjunctivitis and keratitis, trachoma, epidemic conjunctivitis, diphtheritic conjunctivitis, toxic amblyopia from wood alcohol, etc. Relation of heredity and consanguinity to diseases of the eye.

3. Illumination.

1011. *Oral Prophylaxis.*
For students registered in the School for Health Officers.
Three lectures given at the Harvard Medical School, Amphitheatre, Bldg. E, on dates to be announced.
Professor WILLIAM H. POTTER.

This course will consider the causes and prevention of certain diseases and irregularities of the teeth, and will include a discussion of school inspection and dental infirmaries.

1012. *Personal Hygiene.*
For students registered in the School for Health Officers.
Six lectures given at the Harvard Medical School, Amphitheatre, Bldg. E, on dates to be announced.
Professor W. B. CANNON.

The topics covered are as follows: —

1. *Exercise.* Physiological elements involved. Effects of exercise on circulation, respiration, excretion, temperature, digestion, metabolism, and structure. Results of exercise favorable to health. Injurious effects of exercise.

2. *Fatigue.* Seats of fatigue. Nature of fatigue — probable causes. Effects of various conditions on fatigue. Some manifestations of fatigue.

3. *Rest.* Relation to activity. Natural periods of rest. Sleep. Differences in bodily needs in rest and activity. Metabolism. Uses of rest.

4. *Bathing.* Varieties of baths. Physiological effects of various baths. Times of bathing, in relation to exercise, sleep, and eating.

5. *Clothing.* Uses of clothing. Importance of texture in different conditions. Texture of clothing materials. Selection of clothing for various purposes.

6. *Diet.* Bodily demands for nourishment. Different values of food. Considerations regarding choice of food. Conditions influencing the amount of food required.

1013. *Tropical Plants with reference to their bearing on Tropical Medicine.*
(Offered by the School of Tropical Medicine, and open to students registered in the School for Health Officers.)
Given at the Harvard Medical School in March, dates to be announced.
OAKES AMES, Director of the Botanic Garden.

This course will consist of lectures and demonstrations on the more important poisonous plants of the tropics, and is planned to give a comprehensive survey of those branches of Economic Botany that will prove helpful in tropical regions.

1014. *Posture and the Prevention of Deformities.*
For students registered in the School for Health Officers.
Four lectures given at the Children's Hospital on dates to be announced.
Professor R. W. Lovett.

A course of four exercises, consisting of lectures and clinical demonstrations. The subjects considered will be: —

Mechanics of correct and incorrect posture — center of gravity of the body. Conditions promoting correct posture. Conditions promoting incorrect posture. Influence of incorrect posture on the general condition (in children — in adults). Antero-posterior defects in posture (round shoulders, hollow back). Lateral defects in posture (lateral curvature, postural and structural). Relation of school life to lateral curvature of the spine (school furniture). Treatment of all forms of incorrect posture (school treatment, home treatment, treatment by physicians). Flat foot and weak ankles.

1015. *Sanitary Law — Legal Powers of Health Officers.*
For students registered in the School for Health Officers.
Tuesdays and Thursdays in April.
Given at the Harvard Medical School, Amphitheatre, Bldg. E.
Professor Eugene Wambaugh.

This is a course of six exercises and will cover the powers and responsibilities of health officers from the point of view of the law.

1016. *School Hygiene.*
For students registered in the School for Health Officers.
Three lectures given at the Harvard Medical School, on dates to be announced.
Dr. Thomas F. Harrington, formerly Director of Department of School Hygiene of the City of Boston.

I. *School Hygiene.* The problem of health and education. The organization and administration of the Department of School Hygiene, — its scope, methods, and opportunities for applying preventive medicine.

II. *Sanitation.* Lighting, heating, seating, ventilation, humidification, environment. Medical supervision, — school physicians, school nurses, school clinics, home and school coöperation. The Teaching of Physiology and Hygiene, — hygiene instruction, the curriculum. Vocational Hygiene. Massachusetts Laws Relative to Health and Education.

III. *Physical Education,* — school athletics, playgrounds, military drill. Special Classes for Defectives, — methods of testing — Binet,

hearing and vision. Open air classes. Hospital classes. Retarded pupils. Speech defectives. Extension of school hygiene into home, industries, community. Some results.

In addition to these three lectures, opportunity will be offered the students to visit the schools to see the conditions and practical methods employed, and to study the special schools.

1017. *Social Service Work in its Relation to the Work of the Public Health Officer.*

For students registered in the School for Health Officers.

To be given at the Harvard Medical School and at the Massachusetts General Hospital, Blossom Street, Boston, on dates to be announced.

Professor Richard C. Cabot, and Miss Ida Cannon.

Four exercises will be devoted to this subject. The first exercise will outline, in a general way, the scope of the work. In the others the records of patients, illustrating problems in industrial disease, contagious disease, and nervous and mental troubles, and chronic illnesses, will be studied. The course will also include actual demonstrations of social service work.

1018. *Tropical Dermatology.*

(Offered by the School of Tropical Medicine, and open to students registered in the School for Health Officers.)

Given at the Mass. General Hospital on dates to be announced.

Dr. H. P. Towle.

This course will include the study of the lesions of the skin, with particular reference to the more common dermatological affections encountered in tropical countries.

1019. *Tuberculosis.*

For students registered in the School for Health Officers.

Given at the Harvard Medical School on dates to be announced.

Dr. John B. Hawes, 2d, Secretary, Board of Trustees, Massachusetts Hospitals for Consumptives.

The course will consist of six exercises, in which the following points relating to this disease and methods of control and administration will be taken up. Opportunity will be given for those taking this course to become acquainted with the practical workings of the State organization; visits will be made to tuberculosis dispensaries, municipal tuberculosis hospitals, and State sanatoria.

1. General survey of the tuberculosis problem in Massachusetts. Methods of computing the total number of cases and the number

of cases needing treatment in any community. Progress made during the last twenty-five years.

2. Survey of the more important laws relating to tuberculosis and the different problems connected with these laws. Survey of the methods adopted by Massachusetts in controlling tuberculosis.

(*a*) Educational, including large travelling exhibits, small portable exhibits, school exhibits, the use of the public press, moving pictures, and lectures, practical methods of arousing popular interest in tuberculosis in any given community.

(*b*) Statistical, including the reporting and recording of cases.

(*c*) Laboratory diagnosis; free sputum examinations.

(*d*) Institutional control.

3. State institutions for consumptives.

Under this heading will be given a description of the Massachusetts State Sanatoria, methods of administration, admission of patients, and problems connected with the same.

4. Tuberculosis in cities and towns. The municipal control of the disease. In this lecture the tuberculosis problem in the large city, the smaller cities and towns, and the rural districts will be considered.

5. Tuberculosis and the medical profession. Early diagnosis; reporting of cases; coöperation between health officers and local boards of health and the medical profession; coöperation between health officers, voluntary tuberculosis associations, and the medical profession; need of education among doctors as well as the laity.

6. Tuberculosis in schools. The problem of fresh air rooms and outdoor schools. Tuberculosis in factories and work-shops. Tuberculosis in milk. Need of coöperation of all forces.

1020. *Venereal Prophylaxis.*

For students registered in the School for Health Officers.

Two lectures given at the Harvard Medical School, Amphitheatre, Bldg. E. on dates to be announced later.

Professor Hugh Cabot.

1021. *Venomous Animals.*

(Offered by the School of Tropical Medicine, and open to students registered in the School for Health Officers.)

Given at the Zoölogical Museum, Room 15, Cambridge, on dates to be announced.

Dr. Thomas Barbour, Curator of Oceanica, and Associate Curator of Reptiles and Amphibians in the Museum of Comparative Zoölogy, Harvard University.

The course will include the natural history of the various groups of venomous animals (except insects) with special reference to the origin, distribution, and abundance of those species which are dangerous to man, with discussions regarding the means of extermination. The poisonous effect produced and the methods of treatment will also be considered. The work will include lectures, outside reading, and a short report.

GRADUATES

Allen, Andrew Foster, S.B., C.P.H. Tuscaloosa, Ala.

S.B. in Sanitary Engineering (*Massachusetts Institute of Technology*) 1912, C.P.H. (*School for Health Officers*) 1915.

Laboratory Assistant and Watershed Inspector, Water Department, Hartford, Conn., 1912–13.

Agent, Waltham Board of Health, March, 1915–August, 1915.

Agent, Fitchburg Board of Health, January–March, 1916.

Assistant Health Officer, County and City Board of Health, Tuscaloosa, Ala., 1916–.

Boyd, Mark Frederick, M.D., S.M., C.P.H. University of Iowa.

M.D. (*University of Iowa*) 1911, S.M. (*ibid.*) 1913, C.P.H. (*School for Health Officers*) 1914.

Bacteriologist, Laboratory, Iowa State Board of Health, 1911–12.

Health Officer and City Bacteriologist, Oskaloosa, Ia., 1912-13.

State Dairy and Food Inspector for Oskaloosa, Ia., 1912–13.

Charles Follen Folsom Teaching Fellow in Hygiene, Department of Preventive Medicine and Hygiene, Harvard Medical School, 1913–14.

Associate Professor of Bacteriology and Hygiene, University of Nevada, Reno, Nev., 1914–15.

Director, State Hygienic Laboratory, University of Nevada, Reno, Nev., 1914–15. Member of the State Board of Health.

Department of Hygiene and Preventive Medicine, University of Iowa, 1915–.

Brown, Walter Henry, M.D., C.P.H. 1137 Mass. Ave., Cambridge.

M.D. (*Jefferson Medical College*) 1906, C.P.H. (*School for Health Officers*) 1915.

In practice, 1906–14.

Medical Inspector of Schools (*Pennsylvania State Department of Health*), 1912–14.

Acting Epidemiologist (*Massachusetts State Department of Health*), June, 1915–.

Brown, William Eustis, Ph.B., C.P.H. 53 Oxford St., Cambridge.

Ph.B. (*Lafayette College*) 1909, C.P.H. (*School for Health Officers*) 1915.

Private teaching, 1909–12.

Law student, Columbia University, 1912–13.

Resident, South End House, 1914–15.

Health Officer, Town of York, Maine, 1915–16.

Instructor, School for Health Officers, 1915–.

Cole, Ralph Waldo Emerson, M.D., C.P.H. York Village, Maine.
M.D. (*Tufts College Medical School*) 1906, C.P.H. (*School for Health Officers*) 1915.
Interne: — Elliot Hospital, Manchester, N.H.; Passaic General Hospital, Passaic, N. J.; N. Y. Orthopaedic Dispensary and Hospital, New York, N. Y.; U. S. Marine Hospital, Stapleton, N. Y.; July 5, 1906, to February 11, 1909.
Ship Surgeon: — N. Y. and Cuba Mail S.S. Co. February 11, 1909, to May 1, 1909.
Practice-associate: — May 1, 1909, to November 15, 1909.
Surgeon: — U. S. Coast and Geodetic Survey, November 22, 1909, to July 10, 1913 (duty in Philippine Islands).
Health Officer, York, Maine, 1915–.

Cornelius, Albert Franklin, M.D., C.P.H. Berea, Ky.
M.D. (*Hospital College of Medicine, Louisville, Ky.*) 1906, C.P.H. (*School for Health Officers*) 1915.
In practice, 1906–14.
Sanitary Inspector, American Red Cross Sanitary Commission in Serbia, May, 1915–16.

Champion, Merrill Edwin, A.B., M.D., C.P.H. 50 Phillips St., Wollaston.
A.B. (*Harvard University*) 1902, M.D. (*ibid.*) 1906, C.P.H. (*School for Health Officers*) 1914.
Medical Superintendent, Florence Crittenton Maternity Home, Watertown, Mass., 1908–10.
Bacteriologist, Symmes Hospital, Arlington, 1912–.
Junior Physician, Symmes Hospital, Arlington, 1912–.
Physician and Bacteriologist, Board of Health, Arlington, 1913–.
Assistant Director, Hookworm Commission (Rockefeller Sanitary Commission), North Carolina State Board of Health, 1915.
District Health Officer, (Mass.) State Department of Health, 1915–.

Harmon, Gaius Elijah, M.B., M.D., C.P.H. 1353 E. 9th St., Cleveland, O.
M.B. (*Boston University*) 1908, M.D. (*ibid.*) 1909, C.P.H. (*School for Health Officers*) 1914.
House Officer, State Sanatorium, Rutland, Mass., 1909.
House Officer, Newton (Mass.) Hospital, 1909–10.
Pathologist, State Hospital for the Insane, Norwich, Conn., 1910–12.
Graduate student, Department of Biology and Public Health, Massachusetts Institute of Technology, 1912–13.
Instructor in Hygiene and Bacteriology, School of Medicine, Western Reserve University, 1914–.

Holt, William Leland, A.B., M.D., C.P.H. Maplewood, N. J.
A.B. (*Harvard University*) 1901, M.D. (*ibid.*) 1905, C.P.H. (*School for Health Officers*) 1914.
Austin Teaching Fellow in Comparative Pathology, Harvard Medical School, 1905–06.
Graduate student, University of Freiburg, Germany, 1907, 1910–13.
In practice, 1908–10.
Assistant Bacteriologist to Florida State Board of Health, September, 1914, to March, 1915.
Health Officer, South Orange Township, N.J., 1915–.

McDonald, William Joseph, A.B., M.D., C.P.H. 47 Garrison R'd, B'kline.
A.B. (*Harvard University*) 1895, M.D. (*ibid.*) 1899, C.P.H. (*School for Health Officers*) 1915.
Graduate student, Department of Pathology, Harvard Medical School, 1899–1901.
In practice, 1900–14.
Graduate student, Department of Preventive Medicine and Hygiene, Harvard Medical School, 1915–.

Neagle, Harry Benjamin, A.B., M.D., C.P.H.
A.B. (*Bowdoin College*) 1899, M.D. (*Johns Hopkins University*) 1903, C.P.H. (*School for Health Officers*) 1914.
Assistant, Loomis Sanatorium, Loomis, N. Y., 1903–04.
Associate Physician, Loomis Sanatorium, 1904–08.
Professor of Preventive Medicine, Harvard Medical School, China.

Osborn, Stanley Hart, M.D., C.P.H. 40 Holten St., Peabody, Mass.
M.D. (*Tufts College*) 1914, C.P.H. (*School for Health Officers*) 1915.
Graduate student, Department of Sanitary Engineering, Summer School, Harvard University, 1914.
Biologist, Metropolitan Water Board, Boston, 1914.
Sanitary Inspector, American Red Cross Sanitary Commission in Serbia, May, 1915–December, 1915.
District Health Officer, Mass. State Department of Health, 1916–.

Samper, Bernardo, B.A., M.D., C.P.H. Bogotá, Colombia, South America.
B.A. (*Colegio Mayor de Nuestra Senora del Rosario*) 1907, M.D. (*Facultad de Medicina, Universidad Nacional*) 1914, C. P. H. (*School for Health Officers*) 1916.

FORMER SPECIAL STUDENTS

Horan, Charles F. Watertown, Mass.
Instructor in Chemistry and Physics, Johnstown (Pa.) High School, 1911–12.
Special courses in Chemistry, University of Pittsburgh, 1912–13.
Pathologist, Mercy Hospital of Johnstown, 1911–15.
Consulting Pathologist, Johnstown City Hospital, 1913–14.
Consulting Bacteriologist and Food Chemist, Infant Welfare Commission, Johnstown, 1914.
Toxicologist, Coroner's Office, Cambria County (Pa.), 1912–15.
Student, School for Health Officers, 1914–15.
Agent of the Board of Health, Watertown, Mass.

Herbert Wilcox Knight, M.D. Mansfield, Pa.
M.D. (*Baltimore Medical College*) 1903.
Examined and licensed in New York, Pennsylvania, and Maryland.
Special course, children's diseases, Nursery and Children's Hospital, Baltimore, Md., 1903.
Children's Department, Maryland General Hospital, 1903–04.
In practice, 1903–12.
Practice in Tropical Africa, 1912–14.
Student, School for Health Officers, 1914–15.

Mendelson, Ralph Waldo, M.D.
M.D. (*Northwestern University Medical School*) 1911.
A.A. Surgeon, U. S. Navy, 1913–14.
Student, School for Health Officers, 1914–15, First Term.
Sanitary Inspector, American Red Cross.
Sanitary Commission in Serbia, May, 1915–.

Platt, Philip Skinner, A.B., A.M. 105 E. 22d St., New York, N. Y.
A.B. (*Yale University*) 1912, A.M. (*ibid.*) 1913.
Graduate student, Department of Biology and Public Health, Massachusetts Institute of Technology, 1912–13.
Student, School for Health Officers, 1913–14.
Superintendent, Bureau of Public Health and Hygiene, Department of Social Welfare, N. Y. Association for Improving the Condition, 1914–.

Saville, Charles, S.B. 3612 Swiss Ave., Dallas, Texas.
S.B. (*Massachusetts Institute of Technology*) 1906.
Assistant Engineer, Mass. State Board of Health, 1904–10.

Assistant Engineer, Emscher Drainage Board, Essen, Germany, 1910–11.
Member of firm of Hering & Gregory, New York City, 1911–14.
Student, School for Health Officers, 1914–15, First Term.
Director of Sanitation, Dallas, Texas, 1915–.

Stuart, Edward, S.B.

S.B. (*Massachusetts Institute of Technology*) 1910.
Consulting Engineer, Oklahoma State Department of Health, Oklahoma City, 1910–11.
Engineer and Contractor, Oklahoma City, Okla., and Brookhaven, Miss., 1911–13.
Engineer, Caompantria Constructora de Santos, Santos, Brazil, 1913–14.
Student, School for Health Officers, 1914–15.
Sanitary Engineer, American Red Cross Sanitary Commission in Serbia, May, 1915–.

STUDENTS IN THE SCHOOL

1915–16

Bartlett, Leslie Raymond. Holliston, Mass.
Hospital Corps, U.S. Navy, 1910–14.
Student, School for Health Officers, 1915–16.

Bradley, John Ruskin, M.D. 162 Huntington Ave., Boston.
M.D. (*Cornell University Medical College*) 1907.
Medical Department, U.S. Army, 1909–15.
Special student, School for Health Officers, October–December, 1915.

Gigger, Augustus George, M.D. 24 Queensberry St., Boston.
Ph.G. (*Mass. College of Pharmacy*) 1900.
M.D. (*Boston University Medical School*) 1906.
Private Practice, 1906–15.
Student, School for Health Officers, 1915–16.

Holloway, Howard Steele, M.D. 78 St. James Place, Boston.
M.D. (*University of Maryland School of Medicine*) 1903.
Laboratory Assistant, Florida State Board of Health, 1904–07.
Pathologist, State Hospital for Insane, Chattahoochee, Fla., 1912–13.
Pathologist, St. Luke's Hospital, Jacksonville, Fla., 1913–15.
Private Practice, 1904–06.
Private Laboratory for Clinical Microscopy, 1913–15.
Student, School for Health Officers, 1915–.

Hoyt, Robert Nelson, S.B. 502 Worcester St., Wellesley Hills.
S.B. in Biology and Public Health (*Massachusetts Institute of Technology*) 1909.
Biologist, Metropolitan Sewage Commission, N.Y. City, 1909–10.
Health Inspector, Summit, N.J., 1910–11.
Health Officer, Princeton, N.J., 1911–12.
Director, Coöperating Boards of Health, Wellesley, 1913–.
Student, School for Health Officers, 1915–.
Health Officer, Manchester, N. H., 1916–.

Hsieh, En Tseng, M.D. 316 Huntington Ave., Boston.
M.D. (*Union Medical College*) 1910.
Student, North Union College of Arts, China, 1901–03.
Plague work, Manchuria, 1910.

Red Cross Work, 1911.
Physician of the General Hospital of the Board of the Interior, Pekin, 1913.
Demonstrator, Union Medical College, Pekin, China, 1914–15.
Student, School for Health Officers, 1915–16.

Ingham, Edward Alexander, S.B. 299 Tappan St., Brookline.
S.B. in Chemistry (*Washburn College*) 1911.
High school teaching (Chemistry and Physiology), 1911–12.
Graduate student, Department of Biology and Public Health, Massachusetts Institute of Technology, 1912–13.
Assistant in Bacteriology, Johns Hopkins University, 1913.
Instructor in Biology and Public Health, M. I. T., 1913–.
Research Associate, Sanitary Research Laboratory, M. I. T., 1913–.
Lecturer in Hygiene, Tufts College Medical School, 1914–.
Editorial Assistant, *American Journal of Public Health*, 1913–16.
Student, School for Health Officers, 1914–16.

James, Linda, B.A. 2 Divinity Ave., Cambridge.
B.A. (*University of Minnesota*), 1914.
Teacher of Sciences, Monticello High School, Monticello, Minn., 1914–15.
Student, School for Health Officers, 1915–.

Mackler, Max, PHARM.D., PH.C. 643 Huntington Ave., Brookline.
PHARM.D. (*Massachusetts College of Pharmacy*) 1913, PH.C. research in Pharmaceutical Chemistry and Food Analysis (*ibid.*) 1914.
Research work in commercial drugs, Choate Drug and Chemical Company, 1913, 1914.
Research work in milk bacteria under the direction of Dr. C. G. Page of the Harvard Medical School.
Student, School for Health Officers, 1914–.

Mitchell, Harold Hubbard, M.D. 316 Huntington Ave., Boston.
B.S. (*Syracuse University*) 1914, M.D. (*ibid.*) 1914.
House Officer, South Department, Boston City Hospital, 1914.
Student, School for Health Officers, 1914–15.
Sanitary Inspector, American Red Cross Sanitary Commission in Serbia, May, 1915–.
Student, School for Health Officers, 1915–16.

Paul, George Philip, M.D. 187 St. Botolph St., Boston.
M.D. (*New York University and Bellevue Hospital Medical College*) 1902.
House Physician and Surgeon, Samaritan Hospital, Troy, N.Y., 1902–04.
Adjunct Radiographer, Samaritan Hospital, 1903–06.
Visiting Physician, Staff Samaritan Hospital, 1906.
Student in Europe, 1906–07.
Private practice, 1904–15.
Health Officer, Round Lake, N.Y., 1909–15.
Author, "Acute Infectious Fevers," 1906, 1911, 1915; "Materia Medica," 1907, 1911.
Student, School for Health Officers, 1915–16.

Pratt, Aaron Paul, A.B. 2 Arnold Circle, Cambridge.
A.B. (*Clark University*) 1913.
Student in Harvard Medical School, 1913–15.
Student, School for Health Officers, 1915–16.

Tayntor, Lewis Olds, Ph.C. 38 Hemenway St., Boston.
Ph.C. (*Mass. College of Pharmacy*) 1909.
Special student, Massachusetts Institute of Technology, 1912–13.
Bacteriologist and Chemist, Boston Dairy Co., 1911–13.
Assistant Health Officer, Montclair, N.J., 1913–15.
Student, School for Health Officers, 1915–.

Woo, Sien-Ming, A.B., M.D. 119 Hemenway St., Boston.
A.B. (*St. John's University, China*) 1910; M.D. (*Johns Hopkins University*) 1915.
Graduate student, Johns Hopkins University. 1910–11.
Student, School for Health Officers, 1915–16.